CITY OF LOWELL
CONTRIBUTORY RETIREMENT SYSTEM

Actuarial Valuation Report

January 1, 2006

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Report Summary:

Highlights	January 1, 2004	January 1, 2006
Contributions		
Funding Schedule FY 2007	$14,208,197	$14,208,197
Funding Schedule FY 2008	14,818,879	15,427,693
Funded Ratios		
GASB No. 25	63.8%	58.5%
Participants		
Actives	1,882	1,845
Retirees and Beneficiaries	953	918
Vested	0	0
Inactives	272	253
Disabled	197	194
Total	3,304	3,210
Payroll		
Payroll of Active Members	$70,987,840	$75,223,915
Average Payroll	37,719	40,772
Normal Cost		
Employer	2,273,967	3,027,875
Employee	5,838,824	6,139,360
Administrative Expenses	469,033	480,000
Total	8,581,824	9,647,235
Actuarial Accrued Liabilities		
Actives	142,257,412	169,135,555
Retirees, Beneficiaries, Disabilities and Inactives	191,104,924	198,256,551
Total	333,362,336	367,392,106
Actuarial Value of Assets	212,820,983	215,006,620
Unfunded Actuarial Accrued Liabilities	$120,541,353	$152,385,486

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2006, of Lowell Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2006.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the City of Lowell Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2006.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the preceding two years, the total unfunded actuarial accrued liability increased by 26.4% to $152,385,486. The increase is the result of net unfavorable actuarial experience during the preceding years. The actuarial value of assets for 2004 and 2005 had returns of 1.2% and 4.4%, respectively. Due to an investment return less than the 8.25% assumption, the result is a loss of $22,713,199. The liabilities incurred a loss of $7,581,112, for a total loss of $30,294,310.

Actuarial Costs and Liabilities:

Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

Table I

	January 1, 2004	January 1, 2006
Superannuation	$8,112,791	$6,104,214
Termination	N/A	1,139,154
Death	N/A	427,901
Disability	N/A	1,495,966
Administrative Expenses	469,033	480,000
Total Normal Cost	8,581,824	9,647,235
% of Pay	12.1%	12.8%
Employee Contributions	5,838,824	6,139,360
% of Pay	8.2%	8.2%
Employer Normal Cost	$2,743,000	$3,507,875
% of Pay	3.9%	4.7%

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Present Value of Actuarial Accrued Liabilities

The actuarial accrued liabilities (AAL) represents today's value of all benefits earned by the actives and inactives. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

Table II

	January 1, 2004	January 1, 2006
Actives		
Superannuations	$142,257,412	$151,977,798
Termination	N/A	(2,306,387)
Death	N/A	4,562,517
Disability	N/A	14,901,627
Retirees and Inactives		
Retirees and Beneficiaries	191,104,924	147,994,245
Vested	0	0
Terminated (Refund)	N/A	2,043,242
Disabled	N/A	48,219,064
Total	$333,362,336	$367,392,106

Present Value of Future Benefits

The present value of future benefits represents today's value of all benefits earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

Table III

	January 1, 2004	January 1, 2006
Actives		
Superannuation	$214,954,102	$207,822,856
Termination	N/A	7,653,177
Death	N/A	8,236,021
Disability	N/A	29,976,056
Retirees and Inactives		
Retirees and Beneficiaries	191,104,924	147,994,245
Vested	0	0
Terminated (Refund)	N/A	2,043,242
Disabled	N/A	48,219,064
Total	$406,059,026	$451,944,661

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Funded Status and Appropriations:

Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

Table IV

	January 1, 2004	January 1, 2006
Cash equivalents	$133,734	$2,166,649
Short term investments	9,371,725	639,402
Fixed income securities	61,203,071	0
Equities	88,047,727	660,184
International	9,112,759	0
Real Estate	5,962,690	2,808,207
Venture Capital	0	0
Other	6,736,652	211,026,668
Accounts receivable	7,342,462	7,148,337
Accounts payable	(642,142)	0
Accrued income	831,395	2,638
Total Market Value	$188,100,074	$224,452,085
Total Actuarial Value	$212,820,983	$215,006,620

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Actuarial Value of Assets

The actuarial value of assets is determined by projecting the market value of assets as of the beginning of the prior plan year with the assumed rate of return during that year (8.25%) and accounting for deposits and disbursements with interest at the assumed rate of return. An adjustment is then applied to recognize the difference between the actual investment return and expected return over a five year period. This preliminary actuarial value is not allowed to differ from the market value of assets by more than 20%. The calculation of the actuarial value of assets as of January 1, 2006 is presented in Table V.

Table V

		January 1, 2006
(1)	Market value at January 1, 2005	$204,497,743
(2)	2005 Contributions and Transfers	$22,526,823
(3)	2005 Payments and Expenses	($26,548,237)
(4)	Net interest adjustment at 8.25% on (1), (2), and (3) to December 31, 2005	$16,691,357
(5)	Expected market value on January 1, 2006 (1) + (2) + (3) + (4)	$217,167,685
(6)	Actual market value on January 1, 2006	$224,452,085
(7)	2005 (Gain) / Loss	($7,284,400)
(8)	80% of 2005 (Gain) / Loss	($5,827,520)
(9)	2004 (Gain) / Loss	($6,685,033)
(10)	60% of 2004 (Gain) / Loss	($4,011,020)
(11)	2003 (Gain) / Loss	($17,298,319)
(12)	40% of 2003 (Gain) / Loss	($6,919,328)
(13)	2002 (Gain) / Loss	$36,562,008
(14)	20% of 2002 (Gain) / Loss	$7,312,402
(15)	Actuarial value on January 1, 2006, (6) + (8) + (10) + (12) + (14) but not less than 80% nor greater than 120% of (6)	$215,006,620
	Ratio of actuarial value to market value	95.79%

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Unfunded Actuarial Accrued Liabilities

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

Table VI

	January 1, 2004	January 1, 2006
Actuarial Accrued Liability	$333,362,336	$367,392,106
Actuarial Assets	212,820,983	215,006,620
Unfunded Actuarial Accrued Liability	$120,541,353	$152,385,486
Funded Status	63.8%	58.5%

Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2028, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the prior unfunded actuarial accrued liability by June 30, 2028
  $ 146,565,382 over 22 years with 4.5% increasing payments
- Level amortization of the 1992 Early Retirement Incentive by June 30, 2008
  $ 622,001 over 2 years
- Level amortization of the 2002 Early Retirement Incentive by June 30, 2017
  $ 741,251 over 11 years
- Level amortization of the 2003 Early Retirement Incentive by June 30, 2020
  $ 4,456,853 over 14 years
- Interest adjustment for payments contributed quarterly over fiscal year.

The pension appropriation is shown in Table VII.

Table VII

	January 1, 2004	January 1, 2006
Normal cost	$5,211,376	$3,507,875
Amortization payment of the accrued liability	7,300,472	9,409,589
Amortization payment of 1992 ERI liability	347,512	323,321
Amortization payment of 2002 ERI liability	105,221	97,085
Amortization payment of 2003 ERI liability	N/A	506,677
Total cost	$12,964,581	$13,844,547
% of Pay	18.3%	18.4%
Fiscal 2007 cost	$14,208,197	$14,208,197
Fiscal 2008 cost	$14,818,879	$15,427,693

Appropriation Forecast

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2028 as members contributing base percentages 5%, 7%, and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be made at the beginning of the year.

The employer total cost is expected to increase during the next 19 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost represents 18.9% of payroll, increasing to 19.5% for FYE 2008, decreasing to 14.7% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 2.5% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

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Appropriation Forecast

Fiscal Year Ending	Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
2007	$75,223,915	$6,139,360	$3,758,910	$10,449,287	$14,208,197	18.9	58.5
2008	$78,985,111	$6,534,286	$3,852,603	$11,575,090	$15,427,693	19.5	59.8
2009	$82,934,366	$6,953,355	$3,946,269	$11,704,806	$15,651,075	18.9	61.1
2010	$87,081,085	$7,397,996	$4,039,669	$12,202,409	$16,242,078	18.7	62.4
2011	$91,435,139	$7,869,718	$4,132,544	$12,722,404	$16,854,948	18.4	63.9
2012	$96,006,896	$8,370,117	$4,224,607	$13,265,798	$17,490,405	18.2	65.4
2013	$100,807,241	$8,900,881	$4,315,546	$13,833,646	$18,149,192	18.0	67.0
2014	$105,847,603	$9,463,797	$4,405,016	$14,427,046	$18,832,062	17.8	68.6
2015	$111,139,983	$10,060,752	$4,492,645	$15,047,149	$19,539,794	17.6	70.4
2016	$116,696,982	$10,693,743	$4,578,024	$15,695,158	$20,273,182	17.4	72.2
2017	$122,531,831	$11,364,881	$4,660,709	$16,372,326	$21,033,035	17.2	74.0
2018	$128,658,422	$12,076,398	$4,740,218	$16,975,934	$21,716,152	16.9	75.9
2019	$135,091,344	$12,830,656	$4,816,026	$17,715,419	$22,531,445	16.7	77.8
2020	$141,845,911	$13,630,148	$4,887,564	$18,488,181	$23,375,745	16.5	79.8
2021	$148,938,206	$14,477,512	$4,954,216	$18,752,781	$23,706,997	15.9	81.9
2022	$156,385,117	$15,375,538	$5,015,314	$19,596,656	$24,611,970	15.7	84.0
2023	$164,204,372	$16,327,172	$5,070,136	$20,478,505	$25,548,641	15.6	86.1
2024	$172,414,591	$17,335,531	$5,117,902	$21,400,038	$26,517,940	15.4	88.2
2025	$181,035,321	$18,403,908	$5,157,770	$22,363,040	$27,520,810	15.2	90.5
2026	$190,087,087	$19,535,783	$5,188,830	$23,369,376	$28,558,206	15.0	92.8
2027	$199,591,441	$20,734,837	$5,210,101	$24,420,998	$29,631,099	14.8	95.1
2028	$209,571,013	$22,004,956	$5,220,527	$25,519,943	$30,740,470	14.7	97.5
2029	$220,049,564	$23,105,204	$5,481,553	$0	$5,481,553	2.5	100.0
2030	$231,052,042	$24,260,464	$5,755,631	$0	$5,755,631	2.5	100.0
2031	$242,604,644	$25,473,488	$6,043,413	$0	$6,043,413	2.5	100.0
2032	$254,734,876	$26,747,162	$6,345,583	$0	$6,345,583	2.5	100.0
2033	$267,471,620	$28,084,520	$6,662,862	$0	$6,662,862	2.5	100.0
2034	$280,845,201	$29,488,746	$6,996,005	$0	$6,996,005	2.5	100.0
2035	$294,887,461	$30,963,183	$7,345,806	$0	$7,345,806	2.5	100.0
2036	$309,631,834	$32,511,343	$7,713,096	$0	$7,713,096	2.5	100.0
2037	$325,113,426	$34,136,910	$8,098,751	$0	$8,098,751	2.5	100.0
2038	$341,369,097	$35,843,755	$8,503,688	$0	$8,503,688	2.5	100.0

* Calendar basis

** As of the Beginning of the Fiscal Year

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GASB Statements No. 25 and No. 27

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to $0. The required disclosure information is shown in Table VIII.

Table VIII

		January 1, 2004	January 1, 2006
(1)	Actuarial Accrued Liability	$333,362,336	$367,392,106
(2)	Actuarial Value of Assets	212,820,983	215,006,620
(3)	Unfunded Actuarial Accrued Liability	120,541,353	152,385,486
(4)	Funded Ratio (2)/(1)	63.8%	58.5%
(5)	Covered Payroll	$70,987,840	$75,223,915
(6)	UAAL as a percentage of payroll: (3)/(5)	169.8%	202.6%
(7)	Annual Required Contribution (ARC)	$12,964,581	$14,208,197
(8)	Net Pension Obligation	$0	$0

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PERAC Annual Statement
APPENDIX PAGE 3
ACTUARIAL VALUATION AND ASSUMPTIONS

The most recent actuarial valuation of the System was prepared by Buck Consultants as of January 1, 2006.

The normal cost for employees on that date was:	$6,139,360	8.2% of pay
The normal cost for the employer was:	3,027,875	4.0% of pay

The actuarial liability for active members was:	$169,135,555
The actuarial liability for retired members was:	198,256,551
Total actuarial accrued liability:	367,392,106
System assets as of that date:	215,006,620
Unfunded actuarial accrued liability:	$152,385,486

The ratio of system's assets to total actuarial liability was 58.5%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	8.25%
Rate of Salary Increase:	4.75% and 5.25%

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded Actuarial Accrued Liability (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a percent of Covered Payroll (b-a)/c
01/01/06	$215,006,620	$367,392,106	$152,385,486	58.5%	$75,223,915	202.6%
01/01/04	212,820,983	333,362,336	120,541,353	63.8%	70,987,841	170.0%
01/01/03	193,158,554	316,822,473	123,663,919	61.0%	75,040,045	165.0%
01/01/02	182,913,557	310,653,028	127,739,471	58.9%	72,576,500	176.0%
01/01/01	199,137,217	254,402,658	55,265,441	78.3%	64,733,264	85.0%
01/01/00	200,716,660	246,668,379	45,951,719	81.4%	66,994,731	69.0%
01/01/99	158,066,157	230,860,131	72,793,974	68.5%	60,740,274	120.0%
01/01/98	130,569,688	217,723,238	87,153,550	60.0%	56,559,466	154.0%
01/01/97	107,659,833	195,998,599	88,338,766	54.9%	47,028,355	188.0%

Attach Copy of Current Approved Funding Schedule

EXHIBITS

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Age/Service Distribution with Salary as of January 1, 2006

Attained Age	Average Salary <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
20-24	21	0	0	0	0	0	0	0	0	21
	25,623	0	0	0	0	0	0	0	0	25,623
25-29	77	22	0	0	0	0	0	0	0	99
	32,280	37,612	0	0	0	0	0	0	0	33,465
30-34	73	82	8	0	0	0	0	0	0	163
	37,527	47,758	48,701	0	0	0	0	0	0	43,222
35-39	63	92	46	16	0	0	0	0	0	217
	31,743	43,603	49,443	50,231	0	0	0	0	0	41,887
40-44	64	67	63	62	16	0	0	0	0	272
	30,293	36,141	47,409	56,039	60,049	0	0	0	0	43,317
45-49	66	81	39	54	52	12	0	0	0	304
	26,998	30,532	41,534	48,988	62,684	67,441	0	0	0	41,411
50-54	67	79	53	53	38	53	17	0	0	360
	26,198	31,006	31,363	43,911	61,533	65,422	65,683	0	0	41,990
55-59	29	54	40	30	18	25	31	3	0	230
	30,586	29,900	32,758	36,329	44,581	63,197	64,299	50,322	0	40,993
60-64	12	29	27	22	5	6	7	2	0	110
	28,286	32,075	39,796	36,202	36,368	48,650	57,356	63,904	0	37,669
65-69	8	13	10	12	3	4	1	0	0	51
	23,698	30,097	35,485	25,977	28,847	46,164	38,967	0	0	30,541
70+	1	1	7	1	3	1	1	0	3	18
	26	20,931	36,041	24,643	45,313	26,240	27,462	0	33,389	32,649
Total Employees	481	520	293	250	135	101	57	5	3	1,845
Average Salary	30,467	36,646	40,699	45,894	57,521	62,964	62,768	55,755	33,389	40,754

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Retiree Distribution as of January 1, 2006

	Number of Employees			Total Payments		
Attained Age	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	1	0	1	5,632	0	5,632
45-49	5	2	7	53,416	7,399	60,815
50-54	6	7	13	113,151	121,870	235,021
55-59	54	16	70	2,046,813	175,531	2,222,344
60-64	57	50	107	1,965,867	756,398	2,722,265
65-69	78	73	151	2,377,910	893,370	3,271,280
70-74	71	59	130	2,060,575	691,813	2,752,388
75-79	70	92	162	1,542,951	1,127,243	2,670,194
80-84	72	71	143	1,323,647	664,320	1,987,967
85-89	43	46	89	713,700	521,411	1,235,111
90-94	18	15	33	274,855	214,070	488,925
95-99	2	10	12	33,991	74,993	108,984
Total	477	441	918	12,512,508	5,248,418	17,760,926
Average (Age/Payment)	74.6	72.1	73.3	26,232	11,901	19,347
Frequency Percent	52.0	48.0	100	70.4	29.6	100

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Disabled Retiree Distribution as of January 1, 2006

	Number of Employees			Total Payments		
Attained Age	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	2	0	2	48,412	0	48,412
40-44	3	0	3	105,196	0	105,196
45-49	6	1	7	212,670	49,036	261,706
50-54	11	4	15	440,473	81,426	521,899
55-59	37	1	38	1,173,169	48,662	1,221,831
60-64	20	1	21	617,385	4,649	622,035
65-69	25	3	28	832,653	30,178	862,830
70-74	24	1	25	563,790	3,743	567,533
75-79	22	4	26	602,514	46,865	649,379
80-84	18	2	20	474,864	28,368	503,232
85-89	5	1	6	108,648	7,991	116,639
90-94	3	0	3	61,667	0	61,667
95-99	0	0	0	0	0	0
Total	176	18	194	5,241,441	300,917	5,542,359
Average (Age/Payment)	67	67.5	67	29,781	16,718	28,569
Frequency Percent	90.7	9.3	100	94.6	5.4	100

P:\Actrl\11528\2006\[Lowell06_Val.xls]Cash Flow

EXHIBIT 4 - CASHFLOW FORECAST:

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments	Employee Contributions	Employer Contributions	Investment Returns	Net change in plan assets
2006	$24,513,230	$6,139,360	$14,208,197	$17,512,335	$13,346,662
2007	25,149,607	6,534,286	15,427,693	17,927,823	14,740,195
2008	25,781,130	6,953,355	15,651,075	19,125,885	15,949,185
2009	26,555,996	7,397,996	16,242,078	20,422,299	17,506,377
2010	27,408,931	7,869,718	16,854,948	21,844,954	19,160,689
2011	28,331,577	8,370,117	17,490,405	23,402,264	20,931,209
2012	29,450,083	8,900,881	18,149,192	25,098,780	22,698,770
2013	30,644,182	9,463,797	18,832,062	26,939,196	24,590,873
2014	31,859,655	10,060,752	19,539,794	28,936,052	26,676,944
2015	33,194,985	10,693,743	20,273,182	31,101,451	28,873,390
2016	34,620,376	11,364,881	21,033,035	33,445,788	31,223,328
2017	36,165,310	12,076,398	21,716,152	35,979,563	33,606,803
2018	37,831,007	12,830,656	22,531,445	38,707,714	36,238,808
2019	39,489,652	13,630,148	23,375,745	41,654,955	39,171,196
2020	41,143,506	14,477,512	23,706,997	44,840,542	41,881,544
2021	42,764,848	15,375,538	24,611,970	48,258,477	45,481,137
2022	44,444,917	16,327,172	25,548,641	51,973,016	49,403,912
2023	46,148,126	17,335,531	26,517,940	56,012,390	53,717,735
2024	47,813,186	18,403,908	27,520,810	60,411,477	58,523,008
2025	49,431,238	19,535,783	28,558,206	65,211,327	63,874,078
2026	51,057,029	20,734,837	29,631,099	70,454,912	69,763,819
2027	52,600,831	22,004,956	30,740,470	76,190,465	76,335,061
2028	54,095,268	23,105,204	5,481,553	82,297,809	56,789,298
2029	55,459,424	24,260,464	5,755,631	86,949,878	61,506,549
2030	56,814,308	25,473,488	6,043,413	91,992,599	66,695,192
2031	57,802,236	26,747,162	6,345,583	97,479,383	72,769,892
2032	58,606,236	28,084,520	6,662,862	103,475,984	79,617,130
2033	59,226,201	29,488,746	6,996,005	110,046,203	87,304,753
2034	59,577,999	30,963,183	7,345,806	117,262,837	95,993,827
2035	61,798,493	32,511,343	7,713,096	125,122,174	103,548,120

amounts in thousands

EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2006, and does not take into account any subsequent changes.

1. Administration

Each of the 107 contributory retirement systems for public employees of the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

(i) Group 1: Most general employees in State and local government

(ii) Group 2: Certain specified hazardous duty positions

(iii) Group 3: State police officers and inspectors

(iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

3. Salary

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

4. Member Contributions

Member contributions vary depending upon date hired as follows:

Date of Hire	Member Contribution Rate
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later plus	9.0% of Salary
1979 and Later	2.0% of Salary in excess of $30,000

5. Average Salary

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.)

6. Creditable Service

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

7. <u>Service Retirement</u>

a. <u>Eligibility</u>:

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

(i) completion of 20 years of service

(ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member

(iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service

b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table:

Age at	Percentage of Average Salary		
Retirement	Group 1	Group 2	Group 4
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

8. Deferred Vested Retirement

a. Eligibility:

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

b. Benefit Amount:

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

c. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

9. Accidental Disability

a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

b. Benefit Amount:

The accidental disability amount is 72% of annual salary plus $450 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

10. <u>Ordinary Disability</u>

a. <u>Eligibility</u>:

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55).

b. <u>Benefit Amount</u>:

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55, he will receive not less than the superannuation allowance to which he is entitled.

11. <u>Survivor Benefits</u>

a. <u>Occupational Death</u>:

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

b. <u>Non-Occupational Death</u>:

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of $250 per month to the surviving spouse, plus $120 for the first child, plus $90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of $250 per month plus $120 for the first child and $90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

12. Cost-of-Living Increases

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is $12,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

13. Postretirement Death Benefits

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

(i) Option A – Life annuity

(ii) Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member

(iii) Option C – Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

1. Member Data

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

2. Valuation Date

January 1, 2006.

3. Actuarial Cost Method

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

4. Rate of Investment Return

It is assumed that the assets of the fund will accumulate at a compound annual rate of 8.25% per annum.

5. Salary Scale

It is assumed that salaries including longevity will increase at of 3% in 2006 and 4% per year from 2007 to 2010. Starting in 2011 the annual increases will be 4.75% and 5.25% for groups 1 and 4, respectively.

6. Cost-of-Living Increases

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and $12,000 per year.

7. Value of Investments

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC). The actuarial value of assets is determined using a five-year smoothing of asset returns greater than or less than the assumed rate of return.

8. Annual Rate of Withdrawal Prior to Retirement

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

Service	General Employees	Police and Fire Employees
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

9. Annual Rate of Mortality

It is assumed that both pre-retirement and post retirement mortality are represented by the RP-2000 Mortality Table for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward two years for all disabled members.

10. Service Retirement

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

Age	Male General Employees	Female General Employees	Male and Female Police and Fire Employees
50	0.0100	0.0150	0.02000
51	0.0100	0.0150	0.02000
52	0.0100	0.0200	0.02000
53	0.0100	0.0250	0.05000
54	0.0200	0.0250	0.07500
55	0.0200	0.0550	0.15000
56	0.0250	0.0650	0.10000
57	0.0250	0.0650	0.10000
58	0.0500	0.0650	0.10000
59	0.0650	0.0650	0.15000
60	0.1200	0.0500	0.20000
61	0.2000	0.1300	0.20000
62	0.3000	0.1500	0.25000
63	0.2500	0.1250	0.25000
64	0.2200	0.1800	0.30000
65	0.4000	0.1500	1.00000
66	0.2500	0.2000	1.00000
67	0.2500	0.2000	1.00000
68	0.3000	0.2500	1.00000
69	0.3000	0.2000	1.00000
70	1.0000	1.0000	1.00000

11. Annual Rate of Disability Prior to Retirement

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

Attained Age	General Employees	Police and Fire Employees
20	0.0001	0.0001
30	0.0003	0.0003
40	0.0010	0.0030
50	0.0019	0.0125

In addition, it is assumed for the general employees that 40% of all disabilities are ordinary (60% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

12. Family Composition

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

13. Administrative Expenses

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2006 is $480,000 and is anticipated to increase at 4.5% per year.

EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

1. Actuarial Accrued Liability

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

2. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

3. Actuarial Cost Method

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

4. Actuarial Present Value

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

5. Forecast

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

6. <u>Normal Cost</u>

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

7. <u>Unfunded Actuarial Accrued Liability</u>

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

8. <u>Valuation Method</u>

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

9. <u>Vested Liability</u>

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

CERTIFICATION:

This report fairly represents the actuarial position of the City of Lowell Retirement System contributing as of January 1, 2006, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

Buck Consultants, LLC

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Daniel W. Sherman, ASA, MAAA
Enrolled Actuary No. 05-4086

December 2006

BREAKOUTS

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Breakouts

	Total	City	Housing	Regional Transit	OET	Fire & Police
(1) Participants						
(a) Actives	1845	1,281	94	5	38	427
(b) Inactives	253	224	7	2	10	10
(c) Retirees	918	579	59	1	9	270
(d) Disabled Retirees	194	55	1	0	2	136
(e) Total	3210	2,139	161	8	59	843
(2) Payroll of Active Participants	$75,223,915	$41,698,431	$4,582,288	$335,689	$1,421,131	$27,186,376
(a) Percentage of Payroll	100.0%	55.4%	6.1%	0.4%	1.9%	36.1%
(3) Total Cost Without Interest Adjustments						
(a) 1992 ERI *	323,321	165,907	32,772	10,820	5,655	108,167
2002 ERI	97,085	0	97,085	0	0	0
2003 ERI	506,677	282,680	29,229	13,060	0	181,708
(b) Remaining Amortizations **	9,409,589	5,215,962	573,188	41,991	177,766	3,400,682
(c) Employer Normal Cost **	3,027,875	1,678,424	184,444	13,512	57,203	1,094,292
(d) Administrative Expenses **	480,000	266,076	29,239	2,142	9,068	173,475
(e) Total Appropriation	13,844,547	7,609,049	945,957	81,525	249,692	4,958,324
(4) Fiscal 2008 Cost	$15,427,693	$8,479,155	$1,054,129	$90,848	$278,245	$5,525,316
(5) Fiscal 2009 Cost	$15,651,075	$8,619,879	$1,049,622	$80,985	$283,421	$5,617,168
(6) Percentage of Total Cost	100.0%	55.0%	6.8%	0.6%	1.8%	35.8%

* The 1992 ERI was allocated based on the ratio of the division payroll to the total payroll for City, OET, and Fire and Police. This allocation was based on methods used in prior valuations. The 1992 ERI allocations for Housing and Regional Transit were based strictly off the figures found in the PERAC appropriation letter.

** Costs were allocated based on the ratio of the division payroll to the total payroll for all departments.